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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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In the Matter of )  
 )  
An Allocation of Spectrum for )  
Private Mobile Radio Services ) RM-9267  
 )

To: The Secretary,  
Federal Communications Commission

cc: Chairman William E. Kennard  
Commissioner Susan Ness  
Commissioner Michael Powell  
Commissioner Harold Furchgott-Roth  
Commissioner Gloria Tristani

COMMENTS OF CARL R. STEVENSON IN OPPOSITION  
TO THE REQUESTED REALLOCATION OF 420-430 MHz and 440-450 MHz  
TO THE PRIVATE MOBILE RADIO SERVICES

I hereby submit my comments in opposition to the requested reallocation of the bands 420-430 MHz and 440-450 MHz from Federal use to the Private Mobile Radio Services (PMRS), as proposed in a Petition for Rulemaking from the Land Mobile Communications Council (LMCC) which precipitated this proceeding.

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## I. INTRODUCTION

1. I have been an RF communications systems engineer by profession for over 25 years, as well as a licensed amateur radio operator since 1975 (callsign WA6VSE). In the course of my professional duties over the past two decades, I have done a considerable amount of research in narrowband modulation technologies applicable to the types of systems employed in the PMRS. I was also the winner of a NASA Technical Innovation Award and hold patents in this area of technology as a result of research I conducted under the auspices of NASA as an employee of the California Institute of Technology at NASA's Jet Propulsion Laboratory. I am an interested party in this proceeding.
2. The proposed reallocation of the 420-430 MHz and 440-450 MHz bands to the Private Mobile Radio Services (PMRS) would cause great and irreparable harm to the Amateur Radio Service (ARS) and its ability to provide the public with the high levels of voluntary public service and disaster/emergency communications services for which the ARS is known.
3. I am also concerned about the very negative effects on the future growth and technical progress of the ARS that would accrue, should this vital band be lost to amateur use.
4. Perhaps even more to the point, the LMCC's request is unjustified. The LMCC has not demonstrated a compelling need for the requested spectrum by the PMRS, especially in light of the fact that the PMRS community has made little, if any, real effort or progress in implementing either the letter or the spirit of the Report and Order in the Commission's "Spectrum Refarming" proceeding (PR Docket No. 92-235).
5. In fact, practical, realizable technologies have been available since the late 1980s which would permit the PMRS community to easily make the gains in spectral efficiency expected of them by the Commission in its Report and Order in PR Docket No. 92-235. The fact of the matter is that the PMRS community has, for at least a decade, been "stonewalling" on the adoption of more spectrally efficient techniques, preferring instead to simply ask that more spectrum be allocated to their use.
6. Finally, I believe that the suggestion by the LMCC, in its Petition for Rulemaking, that continued sharing of 420-440 MHz and 440-450 MHz segments on a secondary basis by the ARS would be possible with the PMRS as the primary user lacks veracity and strains credibility to the breaking point.
7. All of these points will be addressed in more detail in the remainder of my comments in the following pages.

**II. THE PROPOSED REALLOCATION WOULD SERIOUSLY AND NEGATIVELY IMPACT UPON THE ABILITY OF THE ARS TO PERFORM ITS PUBLIC SERVICE MISSION AS OUTLINED IN SECTION 97.1(a) OF THE COMMISSION'S RULES**

8. In section 97.1 of the Commission's Rules, the Commission outlines the basis and purpose for the Amateur radio service as follows:

*97.1 Basis and purpose.*

*The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:*

*(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.* (emphasis added)

*(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.*

*(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.*

*(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.*

*(e) Continuation and extension of the amateur's unique ability to enhance international goodwill.*

9. The removal of the bands 420-430 MHz and 440-450 MHz from the ARS would strike a severe blow to the ARS in terms of its ability to provide what has historically been an extremely valuable and very reliable level of voluntary service to the public, both in terms of general public service communications (in support of parades, races, special events conducted by charitable organizations, and other public events, for example) and, more importantly, in terms of emergency/disaster communications assistance to public safety agencies and relief organizations such as the Red Cross, Salvation Army, etc. in times of emergency (floods, fires, earthquakes, tornadoes, hurricanes, etc.)

10. As the LMCC mentions, almost in passing, the band 440-450 MHz is heavily occupied and used by amateur repeater systems. In most relatively urbanized areas, virtually every available channel in this band has been assigned by the regional frequency coordinator and repeater systems were constructed by amateurs long ago. Many of these systems are key components of the local Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Services (RACES) disaster response plans, in addition to being used for the provision of less urgent, but still valuable public service communications activities on an ongoing, voluntary basis. The LMCC neglects to even mention the band 420-430 MHz, which is used extensively by amateurs in many areas for the remote control and link channels necessary to support repeaters in the 440-450 MHz, 144-148 MHz, and other bands, as well as a variety of other special purpose, point to point link requirements.

**III. THE ENTIRE 420-450 MHz BAND, AS PRESENTLY AVAILABLE TO THE ARS IS VITALLY IMPORTANT TO THE ABILITY OF THE ARS TO SUSTAIN GROWTH AND TECHNICAL PROGRESS INTO THE FUTURE.**

11. The 420-450 MHz band is one of the two most important of the VHF/UHF bands allocated to the Amateur Radio Service. As such, it is vital to the future growth and technical progress of the ARS in the foreseeable future.

12. In fact, as the Commission can note from its own licensing records, the great bulk of the growth of the ARS through the entry of new licensees has been occurring, since 1991, in the new Morse-code-free Technician class. This class is restricted to the VHF/UHF bands due to the requirements of the ITU treaty, to which the U.S. is a signatory, that all licensees permitted access to the bands below 30 MHz must demonstrate proficiency in receiving by ear and sending by hand texts in Morse code (though no speed requirement is specified in the ITU treaty, the Commission's current rules permit meaningful access to the bands below 30 MHz only to those who have demonstrated significant high-speed Morse code abilities).

13. Since the vast majority of new licensees are restricted to the VHF/UHF amateur bands, preserving the relative usability of those bands and the availability of frequencies for experimentation and the provision of voluntary services to the public is vital to the ability of the ARS to continue to attract young people interested in learning about radio technology and experimenting with new and innovative communications techniques such as advanced packet radio, satellite communications, etc.

14. If the entire amateur population now using the 420-450 MHz band were forced to relocate to the 144-148 MHz band, the congestion and overcrowding would be so extreme and disruptive that the ARS would be unable to provide the public services it is chartered to provide at the high level of availability and reliability that the public expects and deserves.

15. In addition, many of amateur systems now operating in the 420-450 MHz band would be forced to move higher in frequency, since the 420-450 MHz band is the lowest frequency band allocated to the ARS with sufficient bandwidth (and approval from the Commission, through its rules) to permit the use of the wider bandwidth emission modes necessary to support higher speed data links, spread spectrum modulation techniques, and other advanced systems and techniques where the amateur community can contribute to the advancement of the state of the art (see the Commission's Rules, §97.1(b),(c), & (d), quoted in paragraph 8 above).

16. The next higher band available to the ARS is the 902-928 MHz band, which has been made substantially less useful than had been initially hoped by the amateur community, due to virtual eviction of the ARS from major parts of that band by allocations to Automatic Vehicle Monitoring (AVM) systems and an extreme proliferation of consumer devices authorized in that band under Part 15 of the Commission's Rules. (While it is true that consumer devices authorized under Part 15 of the Commission's Rules are theoretically secondary to the ARS in this band, as a practical matter, their sheer numbers and the practical inability of the amateur community to exercise its rights to interference protection from such devices effectively renders the band practically unusable in many areas of the country. Also, since Part 15 devices are not required to transmit identification it often difficult to identify the source of interference.)

IV. THE ABILITY AND WILLINGNESS OF THE LMCC'S PMRS CONSTITUENCY TO SHARE THE REQUESTED BANDS WITH THE ARS IS DUBIOUS AT BEST AND THE LMCC'S MINIMIZATION OF THE IMPORTANCE OF THE 420-430/440-450 MHz BANDS TO THE ARS IS SELF-SERVING AND COMPLETELY INACCURATE.

17. The LMCC's proposed introduction of PMRS users into these bands would be totally incompatible with continued sharing by the ARS, contrary to the LMCC attempts to imply that continued sharing would be possible.

18. On the contrary, should the PMRS become the primary user, it would only be a matter of time (in all probability a very short time) until the PMRS community would be complaining about amateur operations and be back before the Commission seeking to immediately revoke even secondary status for the ARS in these bands. It is important to note that in the urban areas where the PMRS would have the greatest need for spectrum the ARS frequency coordinators long ago assigned and ARS users have, for years, used ALL of the available channels in the bands in question.

19. The entry of PMRS users into the bands 420-430/440-450 MHz under the pretext of a willingness to share with amateurs is a sham that should not sway the Commission's decision in favor of a primary PMRS allocation in these bands at the ultimate expense of the ARS and the valuable public service communications services it provides through the use of these bands.

V. THE AMATEUR RADIO SERVICE SHOULD NOT NOW, IN ESSENCE, BE PENALIZED FOR HAVING COOPERATIVELY TAKEN A BACK SEAT TO NATIONAL DEFENSE NEEDS DURING THE COLD WAR ERA.

20. The LMCC hastens to point out that the ARS is currently a secondary user in these bands, neglecting the fact that prior to the Cold War era the Amateur Radio Service was a primary status user of these frequencies.

21. It is true that the ARS has for many years very successfully and cooperatively shared the bands in question with the primary Federal Government users on a secondary use basis. That this sharing arrangement was possible at all was due to both the nature of Federal Government use and the willingness of the amateur community to cooperate in the interest of our national security.

22. The fact that the status of the ARS in these bands was downgraded during the Cold War era in order to meet the needs of the national defense does not justify the LMCC's claim that the ARS should remain secondary users now if the factors which necessitated the relegation of the ARS to that secondary status have disappeared.

23. Common sense and fairness would dictate that the ARS should be immediately restored to its historical status as a primary user in the 420-450 MHz band if, in fact, the requirements of the Federal Government for primary use of this spectrum have diminished sufficiently. If the Federal Government requires continued use of these bands, but on a more limited basis than previously, the ARS (a proven sharing partner as far as Federal Government uses are concerned) should be immediately elevated to co-primary status in the entire band.

**VI. THE PMRS COMMUNITY HAS DONE VIRTUALLY NOTHING TO COMPLY WITH THE LETTER AND SPIRIT OF THE COMMISSION'S REPORT AND ORDER IN PR DOCKET NO. 92-235 (THE "SPECTRUM REFORMING INITIATIVE") AND SHOULD NOT BE PERMITTED TO AVOID THE INTENT OF THAT COMMISSION DECISION FOR DECADES AT THE EXPENSE OF OTHER SERVICES.**

24. On June 15, 1995, the Commission adopted the Refarming R&O (PR Docket No. 92-235) to promote more effective and efficient use of the (PMRS) spectrum bands below 800 MHz. The Commission began this proceeding in 1992 to address the problem of PLMR frequency congestion and to satisfy future PMRS requirements. In order to achieve its objective of increasing the efficiency of the PMRS frequency bands, the Commission established a narrowband (NB) channel plan based on current channel centers. In general, this NB plan lists channels every 7.5 kHz in the 150-174 MHz VHF band and every 6.25 kHz in the 421-430 (available only in Detroit, Buffalo, and Cleveland), 450-470, and 470-512 MHz UHF bands (11 cities.) Prior to refarming, channels were 25 kHz wide and, in general, spaced every 25 kHz (primary channels). The R&O modified this channel plan by adding three new NB channels, every 6.25 kHz, above each existing primary channel.

25. As a result of the existing spectrum refarming guidelines referred to above, PMRS users should be effectively doubling and then quadrupling their available frequencies, without the need for any new spectrum allocations.

26. In paragraph (31) of the LMCC proposal, they write that "...the perceived 4:1 packing density increase will not be attained for decades due to the need for a reasonable transition period for existing equipment (see Sec. III, B, *infra*)."

27. The assertion that this process will take "decades" is a wholly unrealistic estimate for the transition. Congress expects all consumers in the U.S. to switch to digital television receivers by 2006, in less than 8 years. Commercial radios are being replaced in less than 10 years time, and with the financial incentives under spectrum refarming, this transition should and could occur much more rapidly. If Congress believes that 8 years is an acceptable transition period for every television consumer in the country, than land mobile services, can certainly "refarm" their spectrum in a time frame much less than "decades."

28. Additionally, unlike the unpaid, self-funded volunteers of the ARS, PMRS users are commercial enterprises which have plenty of financial incentives to increase their core business efficiency, and hence revenue, through the use of enhanced communications in addition to the ability to realize tax write-offs on the expense of new equipment associated with improving their ability to use their existing spectrum in accordance with the Commission's mandate in PR Docket No. 92-235.

29. It makes no financial or business sense for land mobile licensees to spend "decades" refarming their spectrum and the Commission should not allow the mandate of PR Docket No. 92-235 to go ignored by the PMRS community by permitting them to "take the easy way out" through the acquisition of new spectrum at the expense of other services including the ARS.

## VII. SUMMARY

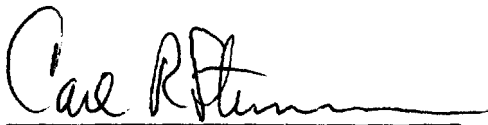
30. In its Petition, the LMCC falls far short of proving its case that the PMRS community must have additional new spectrum allocations, nor does it justify why the PMRS, as commercial, profit-making entities (with the exception of Public Safety Pool users, who have already been provided for by the Commission), should not be required to bid competitively for the huge amounts of VHF/UHF spectrum to be reclaimed as television broadcasters make their mandated move to DTV.

31. Additionally, as has been pointed out above, the LMCC Petition seeks to circumvent both the letter and the spirit of the Commission's mandate to the PMRS community in PR Docket No. 92-235 by substituting the acquisition of additional spectrum allocations at the expense of the ARS and other services for the aggressive, yet entirely feasible, increases in spectral efficiency that the Commission's Report and Order in PR Docket No. 92-235 insists that the PMRS community achieve.

32. I respectfully submit that the LMCC's Petition regarding the 420-430/440-450 MHz bands in this matter is totally without merit and should be summarily DISMISSED.

33. I also respectfully request that the Commission give serious consideration to returning the ARS to its former primary user status in the entire 420-450 MHz band, to the maximum extent possible and at the earliest date that Federal Government requirements so permit, in recognition of both the amateur community's need for stable frequency allocations and the fact that the amateur community diligently and faithfully meets its Commission-mandated goal of voluntarily providing essential, valuable public service and emergency/disaster communications services to the Citizens of the United States.

Respectfully submitted,

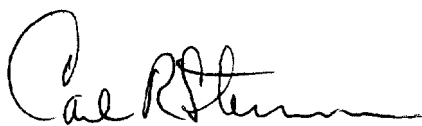


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**CERTIFICATE OF SERVICE:**

On April 22, 1998, the Commission assigned this item file number RM-9267 and requested public comments. The public comment period ends on June 1, 1998. Therefore these comments are timely filed.

On May 27, 1998, I mailed a true and accurate copy of this document (described as "Comments of No Code International in Opposition to the Requested Reallocation of 420-430 MHz and 440-450 MHz to the Private Mobile Radio Services") to the Land Mobile Communications Council, ATTN: Larry A. Miller, President, 1110 North Glebe Road, Suite 500, Arlington, VA 22201-5720 as required by Sections §1.47 and §1.405 of the Commission's Rules (47 C.F.R. §1.47, 47 C.F.R. §1.405)

A handwritten signature in cursive script, appearing to read "Carl R. Stevenson", written over a horizontal line.

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